

Part 2

SUPPLY AND DEMAND: HOW MARKETS WORK



FOURTH EDITION

ECONOMICS

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3

THE MARKET FORCES OF SUPPLY AND DEMAND

MARKETS AND COMPETITION

- ✧ Supply and demand are the two words that economists use most often.
- ✧ Supply and demand are the forces that make market economies work.
- ✧ The terms supply and demand refer to the behaviour of people . . . as they interact with one another in markets.
 - Buyers determine *demand*.
 - Sellers determine *supply*

Market Forces of Supply and Demand

- ✧ Supply and demand determine prices in a market economy and how prices, in turn, allocate the economy's scarce resources.
- ✧ The model of the market based on supply and demand, like any other model, is based on a series of assumptions.

The Assumptions Of The Market Model

The terms supply and demand refer to the behavior of people as they interact with one another in markets.

- ✧ A *market* is a group of buyers and sellers of a particular good or service.
- ✧ A *competitive market* is a market in which there are many buyers and sellers so that each has a negligible impact on the market price.

Competition: Perfect and Otherwise

✧ Perfect Competition

- Products are the same
- Numerous buyers and sellers so that each has no influence over price
- Buyers and Sellers are price takers

✧ Monopoly

- One seller, and seller controls price

Competition: Perfect and Otherwise

✧ Oligopoly

- Few sellers
- Not always aggressive competition

✧ Monopolistic Competition

- Many sellers
- Slightly differentiated products
- Each seller may set price for its own product

Assumption For Efficient Outcomes

The model of supply and demand which leads to this 'efficient' outcome is based on the following:..

- ✧ Many buyers and sellers.
- ✧ Perfect information for all buyers and sellers.
- ✧ Freedom of entry and exit.
- ✧ Identical goods.
- ✧ Buyers and sellers act in self interest.
- ✧ Clearly defined property rights.

Competitive Market

- ✧ A market in which there are many buyers and many sellers so that each has a negligible impact on the market price.
- ✧ Characteristics of a perfectly competitive market:
 - All goods for sale are the same.
 - No buyer or seller can influence market price on their own.
- ✧ Because buyers and sellers must accept the market price as given, they are often called "price takers."

DEMAND

- ✧ *Quantity demanded* is the amount of a good that buyers are willing and able to purchase.
- ✧ *Law of Demand* is the claim that, other things equal, the quantity demanded of a good falls when the price of the good rises.

The Demand Curve: The Relationship between Price and Quantity Demanded

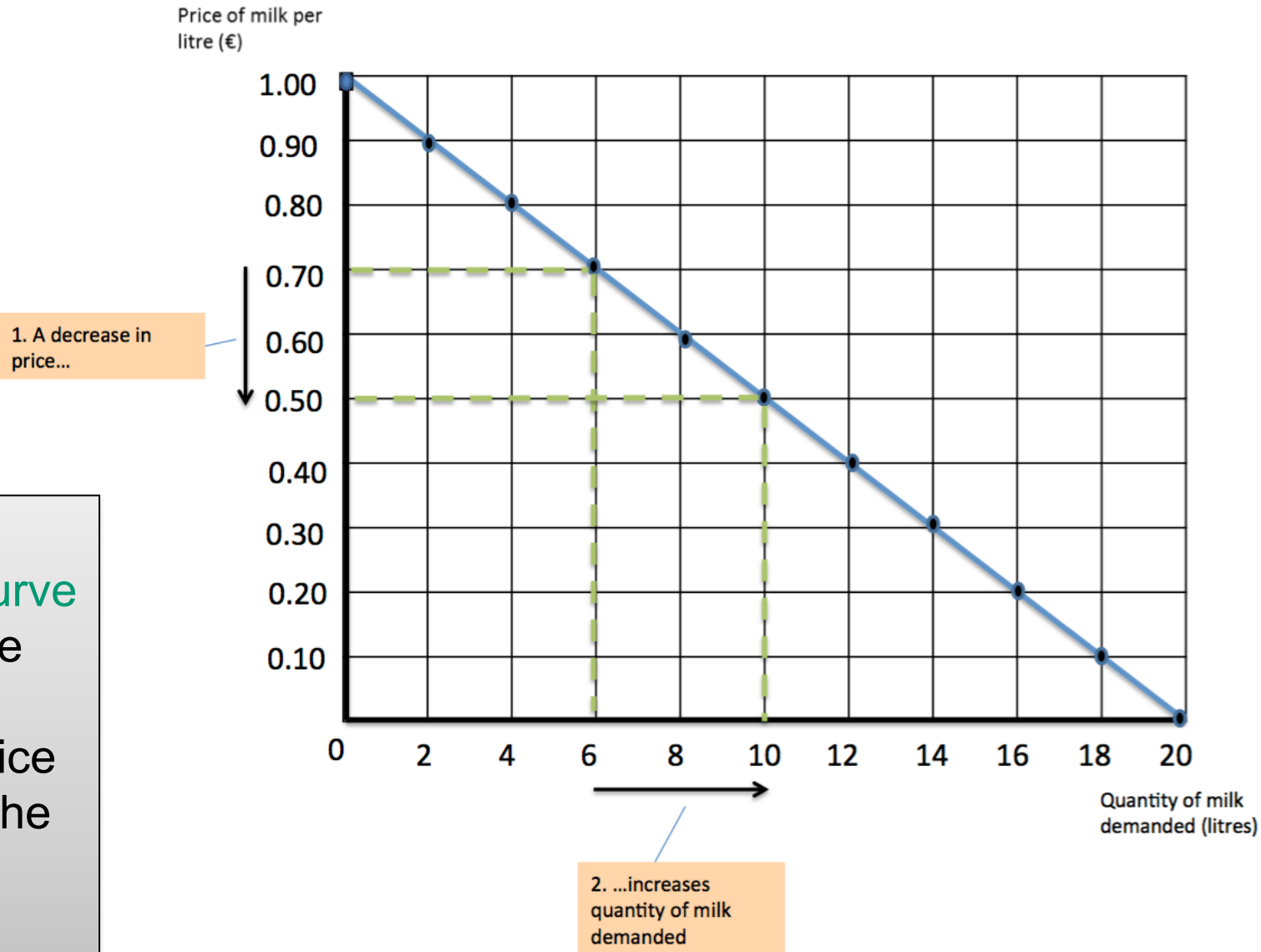
✧ *Demand schedule* is a table that shows the relationship between the price of the good and the quantity demanded.

The Demand Curve: The Relationship between Price and Quantity Demanded

Rachel's Demand Schedule

Price of milk per litre (€)	Quantity of milk demanded (litres per month)
0.00	20
0.10	18
0.20	16
0.30	14
0.40	12
0.50	10
0.60	8
0.70	6
0.80	4
0.90	2

Rachel's Demand Schedule and Demand Curve



The **demand curve** is a graph of the relationship between the price of a good and the quantity demanded.

Market Demand versus Individual Demand

- ✧ Market demand refers to the sum of all individual demands for a particular good or service.
- ✧ Graphically, individual demand curves are summed horizontally to obtain the market demand curve.

Shifts Versus Movements Along The Demand Curve

- ✧ Ceteris paribus - other factors affecting demand are held constant so that we can analyze the effect of a change in price on demand.
- ✧ A shift in the demand curve is caused by a factor affecting demand **other than a change in price.**
- ✧ Change in Quantity Demanded
 - Movement along the demand curve.
 - Caused by a change in the price of the product

Movement Along the Demand Curve

✧ Assume the price of milk falls.

Let us assume that the price of milk falls which will lead to an increase in quantity demanded. There are two reasons for this increase:

The income effect. If we assume that incomes remain constant then a fall in the price of milk means that consumers can now afford to buy more with their income. In other words, their real income, what a given amount of money can buy at any point in time, has increased and part of the increase in quantity demanded can be put down to this effect.

Movement Along the Demand Curve

The substitution effect. Now that milk is lower in price compared to other products such as fruit juice, some consumers will choose to substitute the more expensive drinks with the now cheaper milk. This switch accounts for the remaining part of the increase in quantity demanded.

Shifts in the Demand Curve

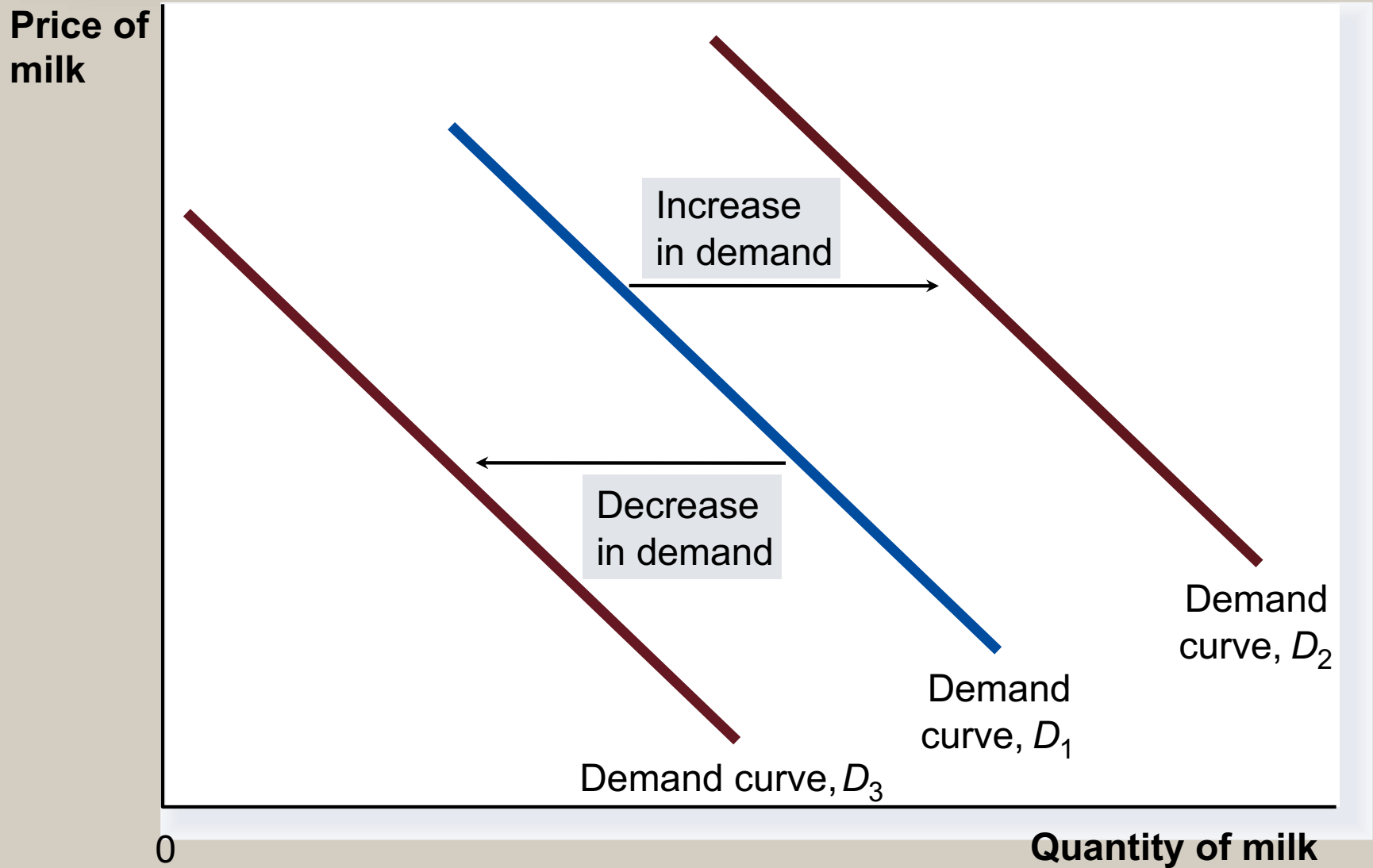
✧ A shift in the demand curve, to the left or right.

- Caused by any change that alters the quantity demanded at every price.

✧ Shifts caused by factors other than price.

- 1) Prices of related goods (substitutes and complements)
- 2) Consumer income.
- 3) Tastes. More people may like something
- 4) Number of buyers (population).
- 5) Advertising
- 6) Expectations of consumers where demand is influenced by expectations of future income and future prices

Shifts in the Demand Curve



Shifts in the Demand Curve

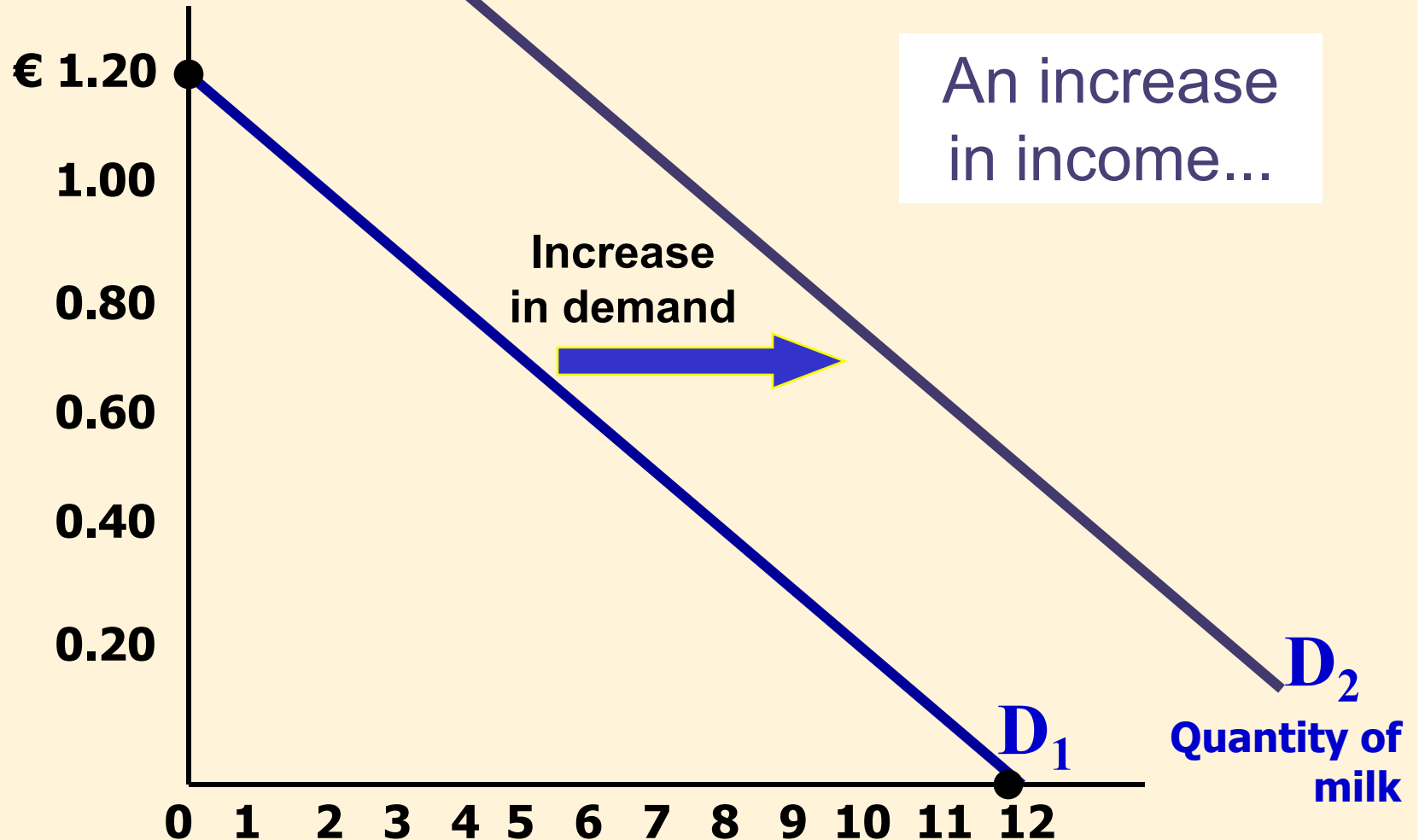
✧ Income

Changes in incomes affect demand. A lower income means that you have less to spend in total, so you would have to spend less on some – and probably most – goods.

- If the demand for a good falls when income falls or rises as income rises, the good is called a *normal good*.
- If the demand for a good rises when income falls, the good is called an *inferior good*.

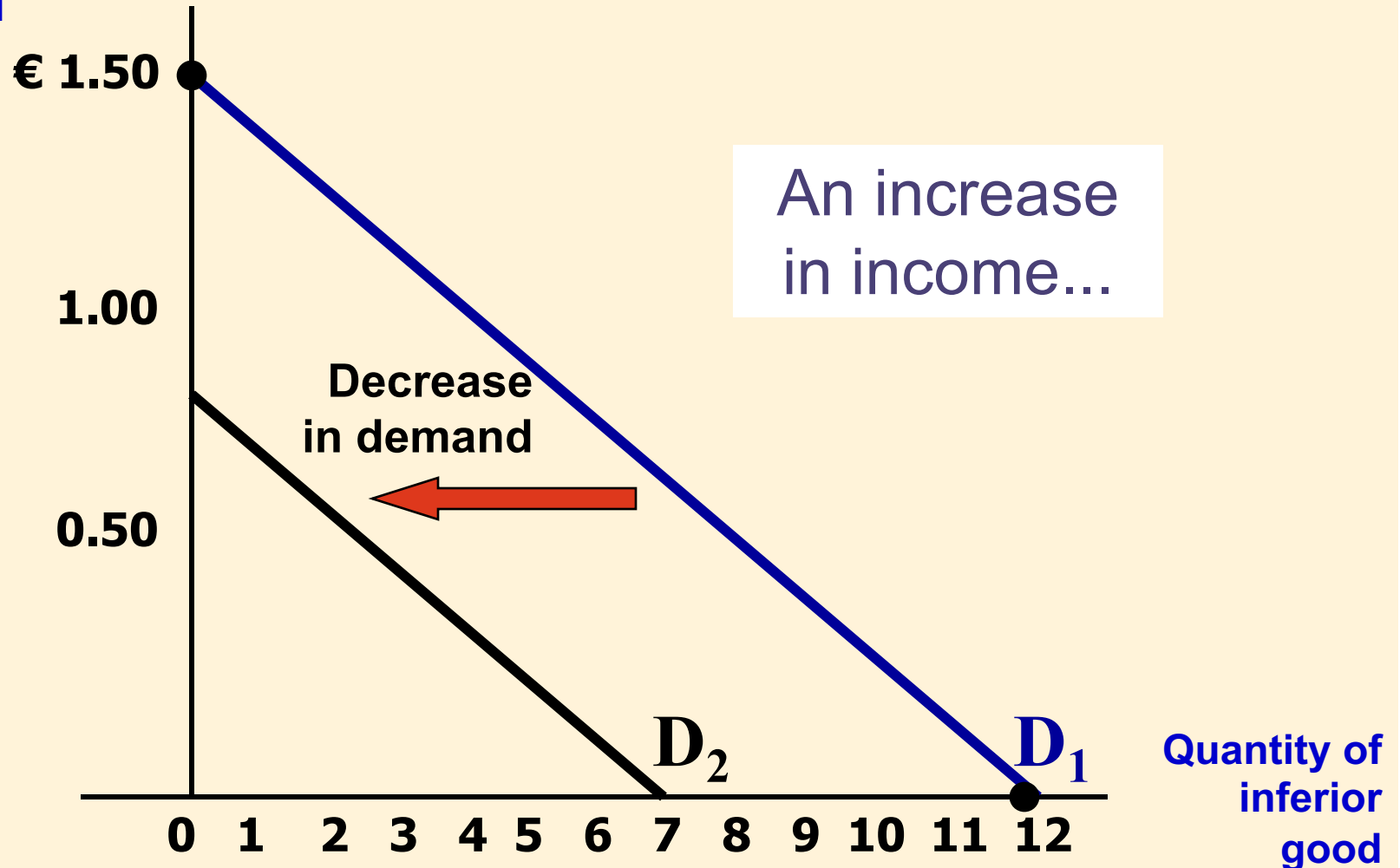
Consumer Income Normal Good

Price of milk



Consumer Income Inferior Good

Price inferior
good



Shifts in the Demand Curve

✧ Prices of Related Goods

Suppose that the price of milk falls. The law of demand says that you will buy more milk. At the same time, you will probably buy less fruit juice. Because milk and fruit juice are both refreshing drinks, they satisfy similar desires.

- When a fall in the price of one good reduces the demand for another good, the two goods are called *substitutes*.

Substitutes are often pairs of goods that are used in place of each other, such as butter and margarine, pullovers and sweatshirts, and cinema tickets and movie streaming. The more closely related substitute products are the more effect we might see on demand if the price of one of the substitutes changes.

Shifts in the Demand Curve

✧ Prices of Related Goods

Now suppose that the price of breakfast cereals falls. According to the law of demand, more packets of breakfast cereals will be bought. When this happens we might expect to see the demand for milk increase as well, because breakfast cereals and milk are used together.

- When a fall in the price of one good increases the demand for another good, the two goods are called *complements*.

Complements are often pairs of goods that are used together, such as petrol and cars, computers and software, bread and cheese, strawberries and cream, and bacon and eggs.

Shifts in the Demand Curve

✧ Tastes

A key determinant of demand is tastes. If you like milk, you buy more of it. Understanding the role of tastes in consumer behavior is taking on more importance as research in the fields of psychology and neurology are applied to economics.

Shifts in the Demand Curve

✧ Population

Because market demand is derived from individual demands, it follows that the more buyers there are the higher the demand is likely to be. The size of the population, therefore, is a determinant of demand. A larger population, *ceteris paribus*, will mean a higher demand for all goods and services.

Changes in the way the population is structured also influences demand. Many countries have an ageing population and this leads to a change in demand. If there is an increasing proportion of the population aged 65 and over, the demand for goods and services used by the elderly, such as the demand for retirement homes, insurance policies suitable for older people, the demand for smaller cars and for health care services, etc. is likely to increase in demand as a result.

Shifts in the Demand Curve

✧ Advertising

Firms advertise their products in many different ways and it is likely that if a firm embarks on an advertising campaign then the demand for that product will increase.

✧ Expectations of Consumers

Expectations about the future may affect the demand for a good or service today. For example, if it was announced that the price of milk was expected to rise next month consumers may be more willing to buy milk at today's price.

Variables That Influence Buyers

Variable	A Change in This Variable . . .
Price	Represents a movement along the demand curve
Income	Shifts the demand curve
Prices of related goods	Shifts the demand curve
Tastes	Shifts the demand curve
Expectations	Shifts the demand curve
Number of buyers	Shifts the demand curve

SELF TEST

Make up an example of a demand schedule for pizza and graph the demand curve. Give an example of something that would cause the demand curve for pizza to shift to the right and to the left.

SUPPLY

- ✧ *Quantity supplied* is the amount of a good that sellers are willing and able to sell.
- ✧ *Law of supply* is the claim that, other things equal, the quantity supplied of a good rises when the price of the good rises.

The Supply Curve: The Relationship between Price and Quantity Supplied

✧ Supply Schedule

- The *supply schedule* is a table that shows the relationship between the price of the good and the quantity supplied.

The Supply Curve: The Relationship between Price and Quantity Supplied

Richard's Supply Schedule

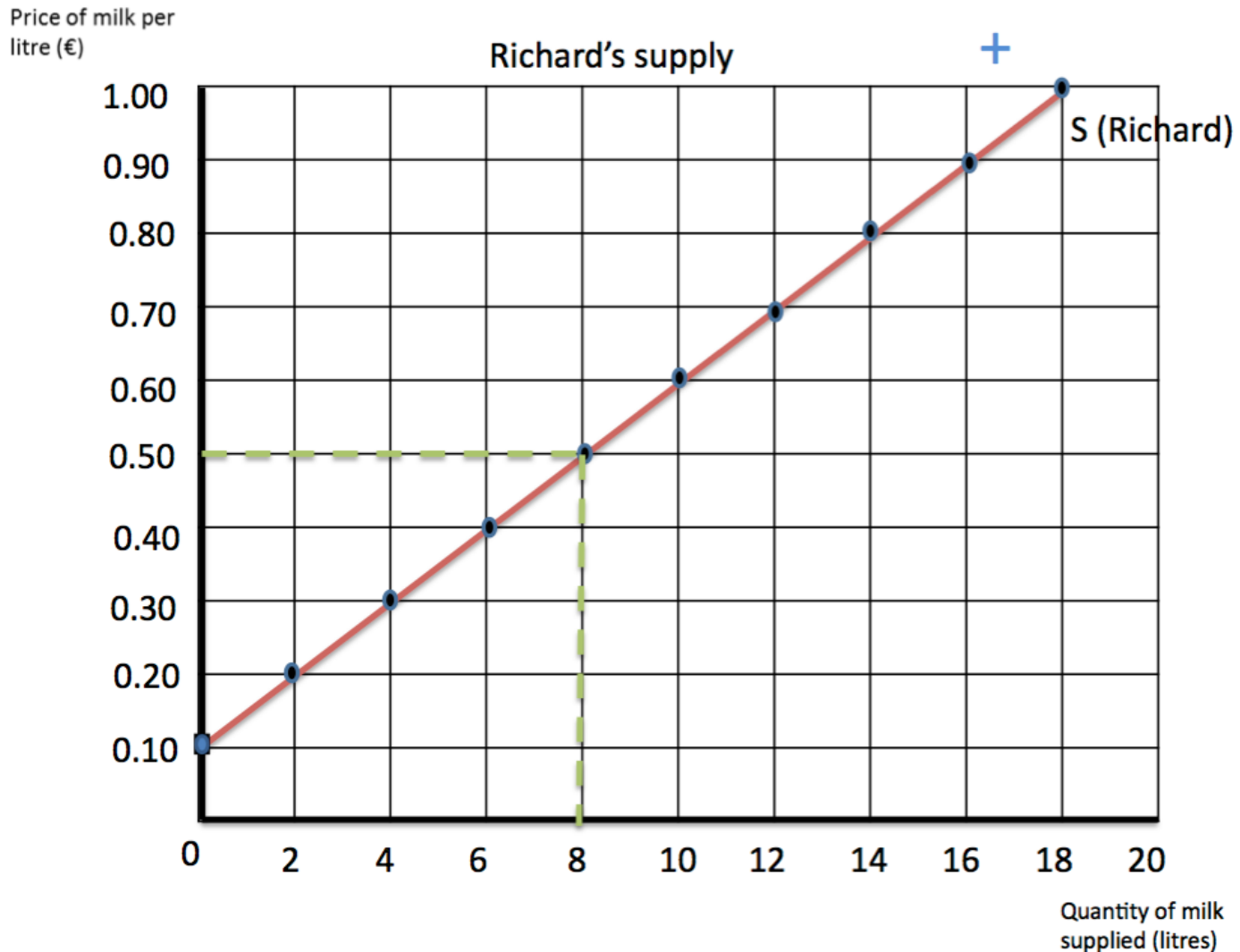
Price of milk per litre (€)	Quantity of milk supplied (litres per month)
0.00	0
0.10	0
0.20	2
0.30	4
0.40	6
0.50	8
0.60	10
0.70	12
0.80	14
0.90	16
1.00	18

The Supply Curve: The Relationship between Price and Quantity Supplied

✧ Supply Curve

- The *supply curve* is the graph of the relationship between the price of a good and the quantity supplied.

Richard's Supply Schedule and Supply Curve



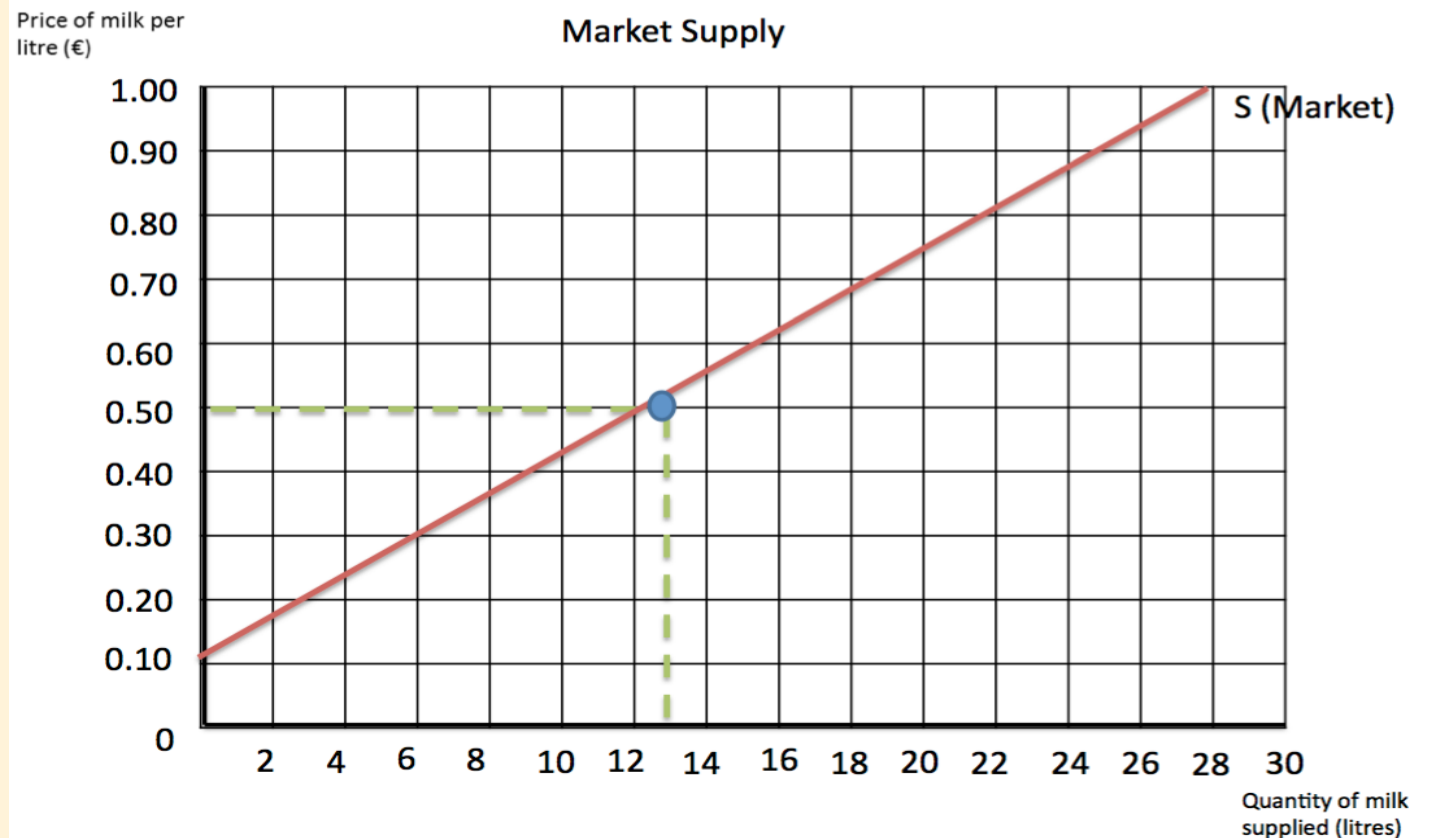
Market Supply versus Individual Supply

✧ Market supply refers to the sum of all individual supplies for all sellers of a particular good or service.

Price of milk per litre (€)	Richard +	Megan =	Market
0	0	0	0
0.1	0	1	1
0.2	2	2	4
0.3	4	3	7
0.4	6	4	10
0.5	8	5	13
0.6	10	6	16
0.7	12	7	19

The Market Supply

✧ Graphically, individual supply curves are summed horizontally to obtain the market supply curve.



Shifts in the Supply Curve

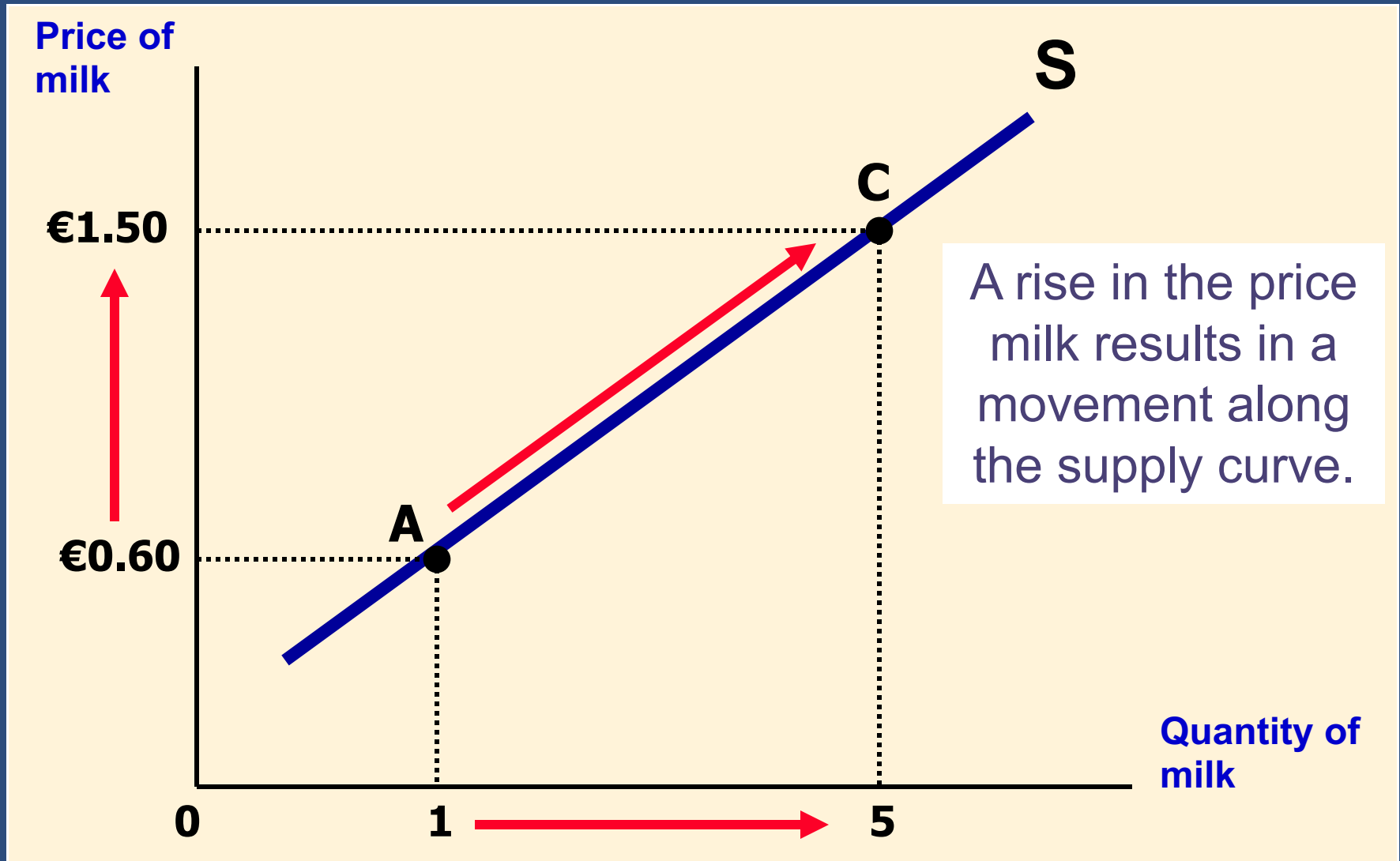
- ✧ Input prices
- ✧ Technology
- ✧ Expectations
- ✧ Number of sellers

Shifts in the Supply Curve

✧ Change in Quantity Supplied

- Movement along the supply curve.
- Caused by a change in anything that alters the quantity supplied at each price.

Change in Quantity Supplied



Shifts in the Supply Curve

The supply curve shows how much producers offer for sale at any given price, holding constant all other factors that may influence producers' decisions about how much to sell.

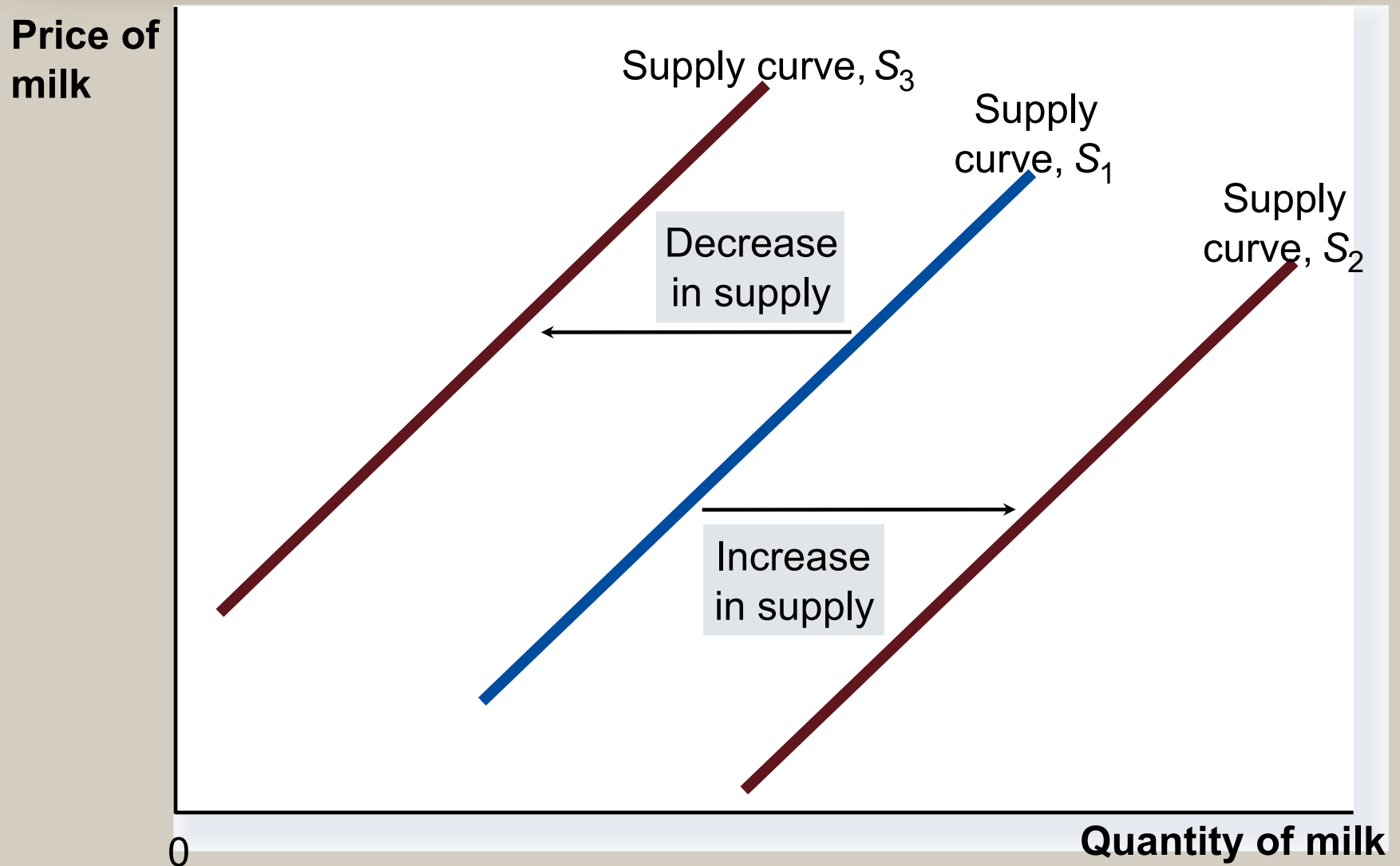
✧ Change in Supply

- A shift in the supply curve, either to the left or right.
- Caused by a change in a determinant other than price.

Shifts in the Supply Curve

- 1) Profitability of other goods in production and prices of goods in joint supply.
- 2) Technology.
- 3) Natural/Social Factors such as the weather and changing attitudes.
- 4) Input prices – the prices of the factors of production.
- 5) Expectations of producers about the future state of the market.
- 6) A change in the number of sellers in the market.

Shifts in the Supply Curve



Shifts in the Supply Curve

✧ Profitability of Other Goods in Production and Prices of Goods in Joint Supply

Firms have some flexibility in the supply of products and in some cases can switch production to other goods. For example, dairy farmers may decide to use some of their land to produce arable crops if the price of those crops rises in relation to the price of milk. If one crop becomes more profitable then it may be that the firm switches to the more profitable product. In other cases, firms may find that products are in joint supply; an increase in the supply of lamb, for example, might also lead to an increase in the supply of wool.

Shifts in the Supply Curve

✧ Technology

Advances in technology increase productivity allowing more to be produced using fewer factor inputs. As a result costs, both total and unit, may fall and supply increases. The development of fertilizers and more efficient milking parlours, for example, have increased milk yields per cow and helped reduce costs as a result. By reducing firms' costs, the advance in technology increases the supply of milk.

Shifts in the Supply Curve

✧ **Natural/Social Factors**

There are often many natural or social factors that affect supply. These include such things as the weather affecting crops, natural disasters, pestilence and disease, changing attitudes and social expectations (for example over the production of organic food, the disposal of waste, reducing carbon emissions, ethical supply sourcing and so on) all of which can have an influence on production decisions. Some or all of these may have an influence on the cost of inputs into production.

Shifts in the Supply Curve

✧ **Input Prices – the Prices of Factors of Production**

To produce any output, sellers use various inputs including land, labour and capital. Dairy farmers, for example, will use fertilizer, feed, silage, farm buildings, veterinary services and the labour of workers. When the price of one or more of these inputs rises, producing milk is less profitable and firms supply less milk.

If input prices rise substantially, a firm might shut down and supply no milk at all. If input prices fall for some reason, then production may be more profitable and there is an incentive to supply more at each price. Thus, the supply of a good is negatively related to the price of the inputs used to make the good.

Shifts in the Supply Curve

✧ **Expectations of Producers**

Output levels can vary according to the expectations of producers about the future state of the market.

The amount of milk a farm supplies today, for example, may depend on its expectations of the future. If it expects the price of milk to rise in the future, the firm might invest in more productive capacity or increase the size of the herd.

Shifts in the Supply Curve

✧ Number of Sellers

If there are more sellers in the market then it makes sense that the supply would increase.

Equally, if a number of dairy farms closed down then it is likely that the amount of milk supplied would also fall. The number of sellers in a market will be determined by the profitability of the product in question and the ease of entry and exit into and from the market.

Variables That Influence Sellers

Variable	A Change in This Variable . . .
Price	Represents a movement along the supply curve
Input prices	Shifts the supply curve
Technology	Shifts the supply curve
Expectations	Shifts the supply curve
Number of sellers	Shifts the supply curve

SELF TEST

Make up an example of a supply schedule for pizza and graph the implied supply curve. Give an example of something that would shift this supply curve. Would a change in price shift the supply curve?

SUPPLY AND DEMAND TOGETHER

✧ *Equilibrium Price*

- The price that balances quantity supplied and quantity demanded.
- On a graph, it is the price at which the supply and demand curves intersect.

✧ *Equilibrium Quantity*

- The quantity supplied and the quantity demanded at the equilibrium price.
- On a graph it is the quantity at which the supply and demand curves intersect.

SUPPLY AND DEMAND TOGETHER

Demand Schedule

price	quantity
€0.00	19
0.50	16
1.00	13
1.50	10
2.00	7
2.50	4
3.00	1

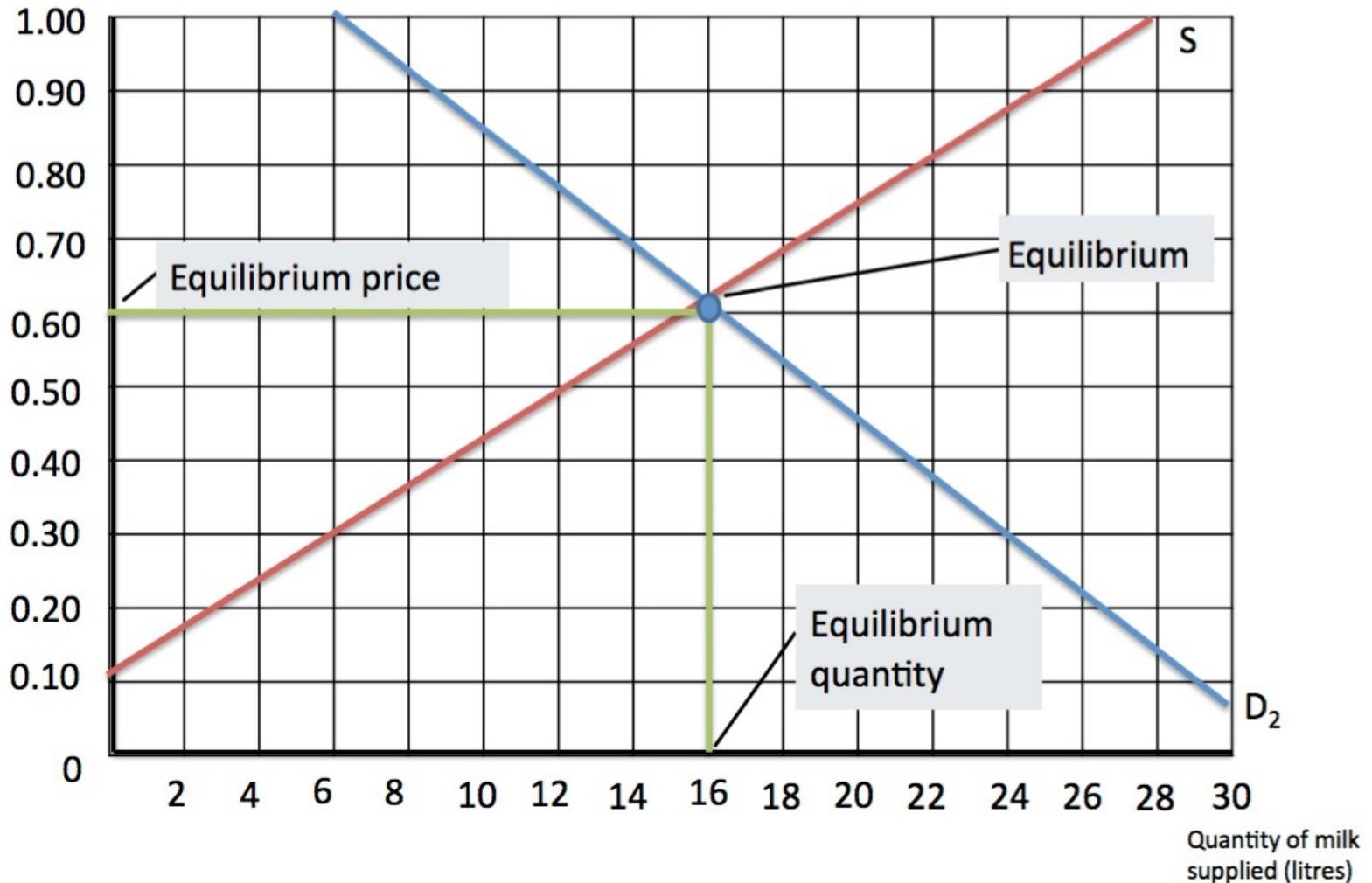
Supply Schedule

price	quantity
€0.00	19
0.50	16
1.00	13
1.50	10
2.00	7
2.50	4
3.00	1

At €2.00, the quantity demanded is equal to the quantity supplied in this example.

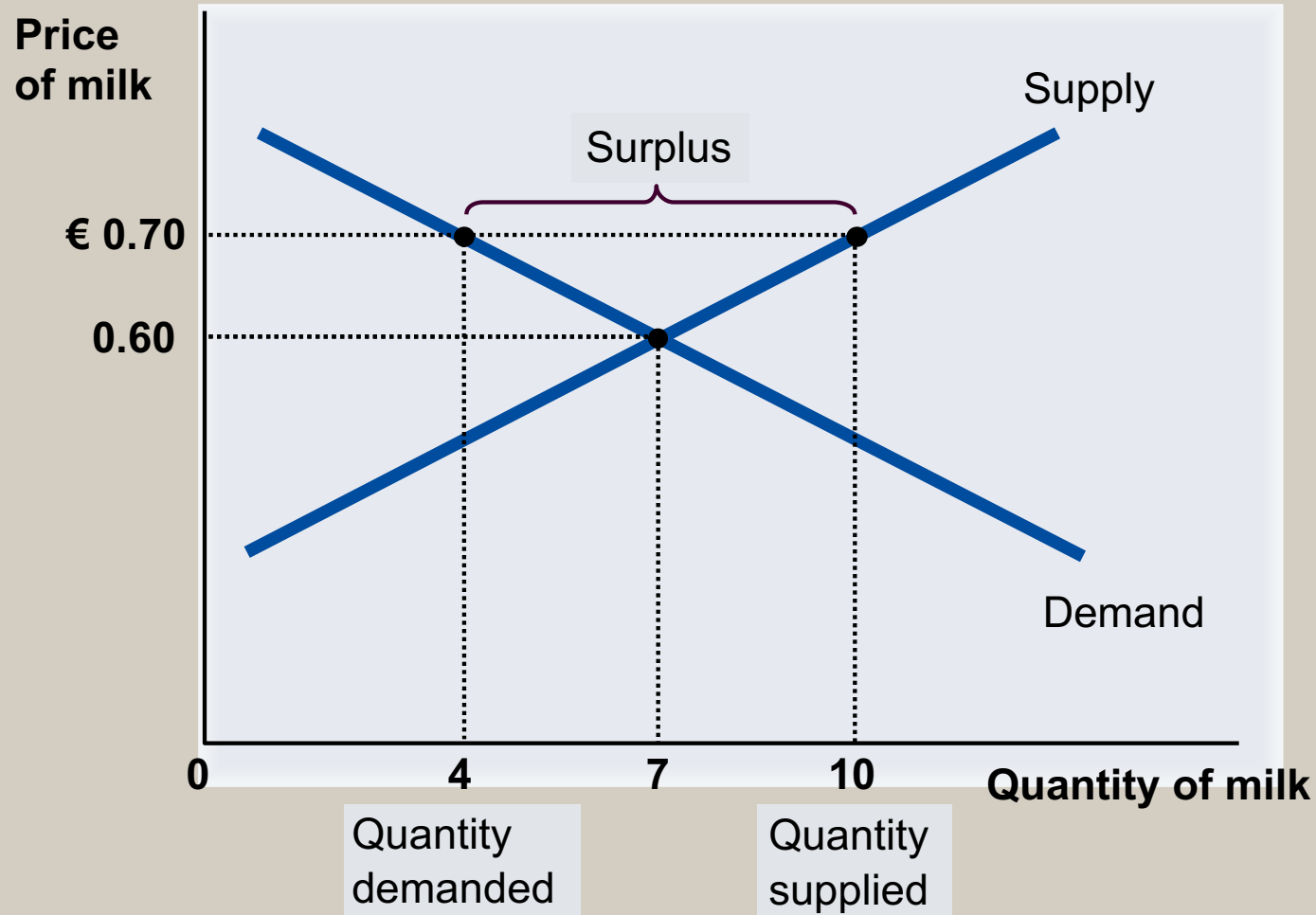
The Equilibrium of Supply and Demand

Price of milk per
litre (€)



Markets Not in Equilibrium

(a) Excess Supply



Equilibrium

✧ *Surplus*

- When price $>$ equilibrium price, then quantity supplied $>$ quantity demanded.
 - There is excess supply or a surplus.
 - Suppliers will lower the price to increase sales, thereby moving toward equilibrium.

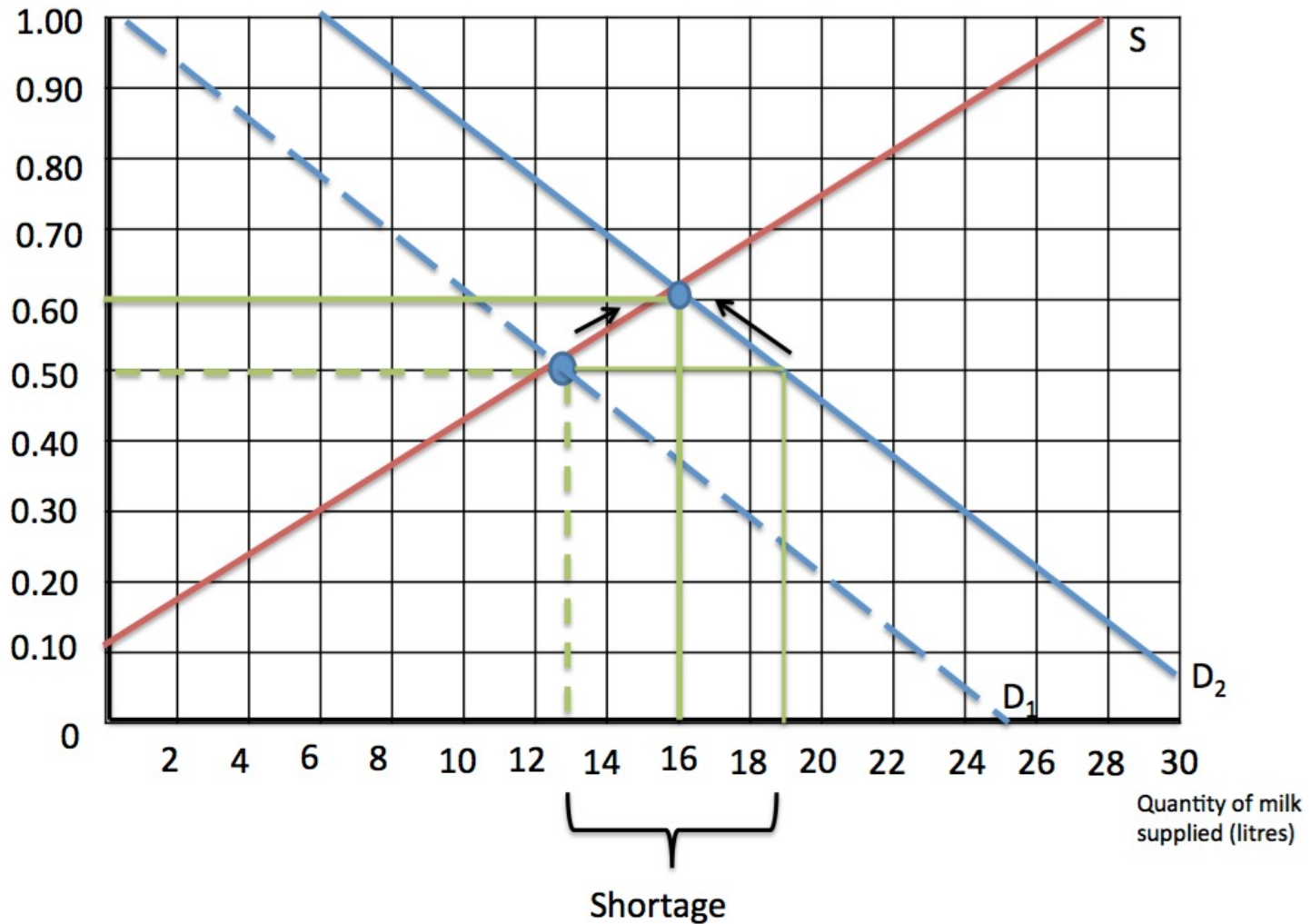
Equilibrium

✧ *Shortage*

- When price $<$ equilibrium price, then quantity demanded $>$ the quantity supplied.
 - There is excess demand or a shortage.
 - Suppliers will raise the price due to too many buyers chasing too few goods, thereby moving toward equilibrium.

Markets Not in Equilibrium

Price of milk per
litre (€)



Equilibrium

✧ *Law of supply and demand*

- The claim that the price of any good adjusts to bring the quantity supplied and the quantity demanded for that good into balance.

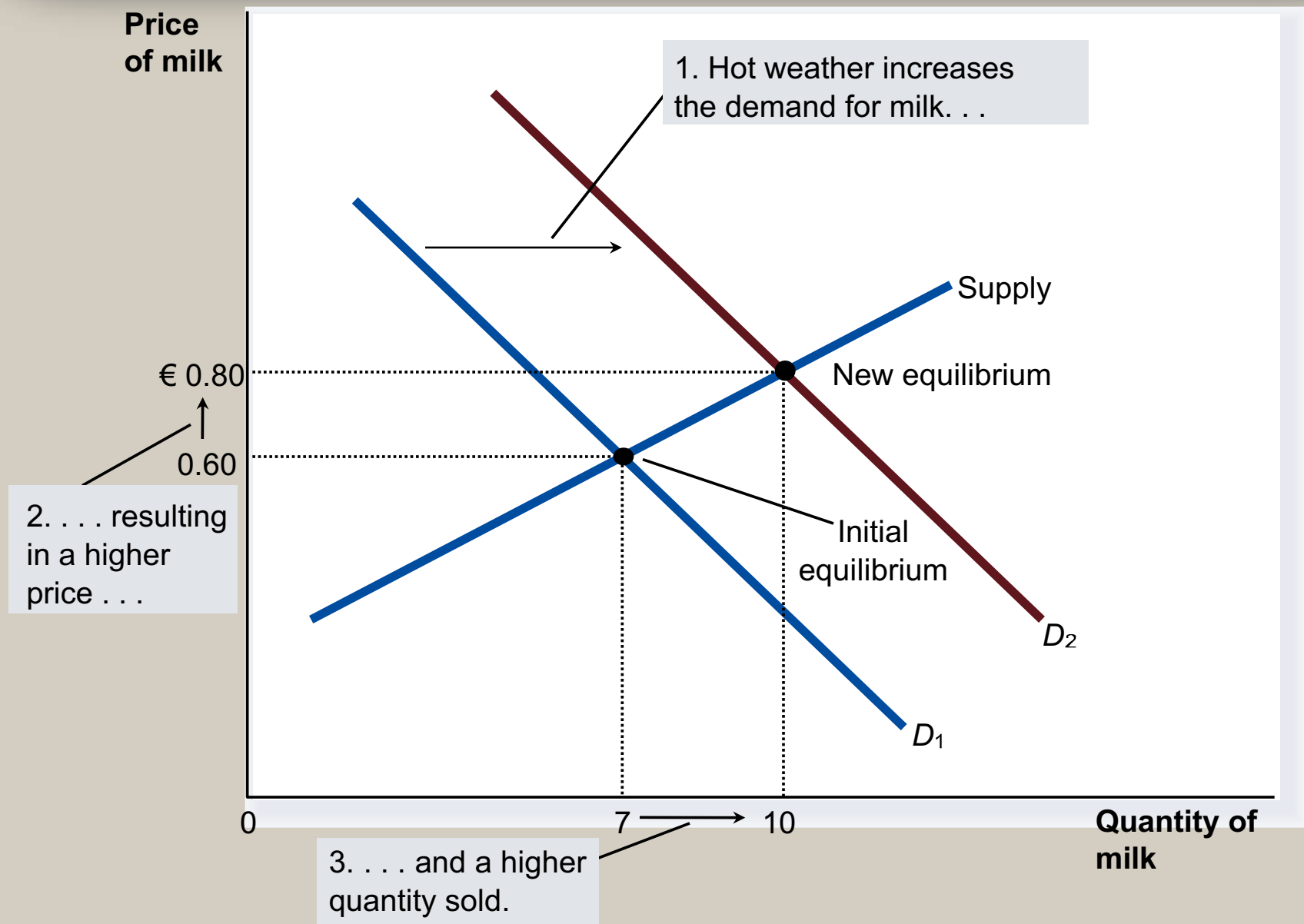
Prices as Signals

- ✧ The main function of price in a free market is to act as a signal to both buyers and sellers.
 - For buyers, price tells them something about what they have to give up (usually an amount of money) to acquire the benefits
 - For sellers price acts as a signal in relation to the profitability of production.

Three Steps to Analyzing Changes in Equilibrium

- ① Decide whether the event shifts the supply or demand curve (or both).
- ② Decide whether the curve(s) shift(s) to the left or to the right.
- ③ Use the supply and demand diagram to see how the shift affects equilibrium price and quantity.

How an Increase in Demand Affects the Equilibrium

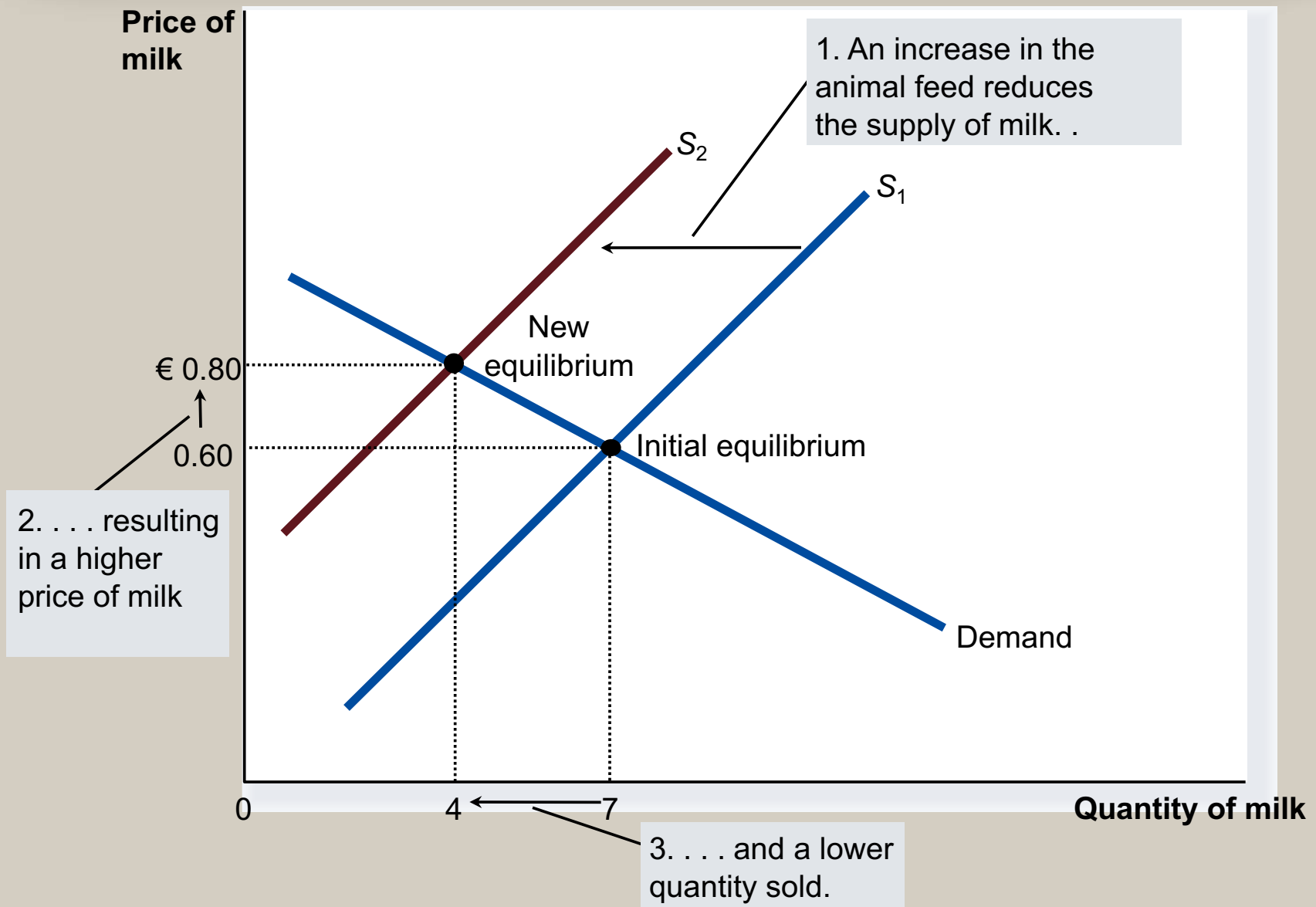


Three Steps to Analyzing Changes in Equilibrium

✧ Shifts in Curves versus Movements along Curves

- A shift in the supply curve is called a change in supply.
- A movement along a fixed supply curve is called a change in quantity supplied.
- A shift in the demand curve is called a change in demand.
- A movement along a fixed demand curve is called a change in quantity demanded.

How a Decrease in Supply Affects the Equilibrium



What Happens to Price and Quantity When Supply or Demand Shifts?

	No Change in Supply	An Increase in Supply	A Decrease in Supply
No Change in Demand	P same Q same	P down Q up	P up Q down
An Increase in Demand	P up Q up	P ambiguous Q up	P up Q ambiguous
A Decrease in Demand	P down Q down	P down Q ambiguous	P ambiguous Q down

Summary

- ① Economists use the model of supply and demand to analyse competitive markets.
- ② In a competitive market, there are many buyers and sellers, each of whom has little or no influence on the market price.

Summary

③ The demand curve shows how the quantity of a good depends upon the price.

- According to the law of demand, as the price of a good falls, the quantity demanded rises. Therefore, the demand curve slopes downward.
- In addition to price, other determinants of how much consumers want to buy include income, the prices of complements and substitutes, tastes, expectations, and the number of buyers.
- If one of these factors changes, the demand curve shifts.

Summary

- ④ The supply curve shows how the quantity of a good supplied depends upon the price.
- According to the law of supply, as the price of a good rises, the quantity supplied rises. Therefore, the supply curve slopes upward.
 - In addition to price, other determinants of how much producers want to sell include input prices, technology, expectations, and the number of sellers.
 - If one of these factors changes, the supply curve shifts.

Summary

- ⑤ Market equilibrium is determined by the intersection of the supply and demand curves.
- ⑥ At the equilibrium price, the quantity demanded equals the quantity supplied.
- ⑦ The behaviour of buyers and sellers naturally drives markets toward their equilibrium.

Summary

- ⑧ To analyse how any event influences a market, we use the supply and demand diagram to examine how the event affects the equilibrium price and quantity.
- ⑨ In market economies, prices are the signals that guide economic decisions and thereby allocate resources.